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Walid Hejazi and Eric Santor

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Walid Hejazi[1] and Eric Santor[2]

[1]University of Toronto at Scarborough
Toronto, Ontario, Canada

[2]International Department
Bank of Canada
Ottawa, Ontario, Canada K1A 0G9
esantor@bankofcanada.ca

The views expressed in this paper are those of the authors.
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Abstract

The international business literature measures the link between the degree of internationalization (DOI) of a firm's activities and its performance. The results of this literature are mixed. The authors extend the analysis to Canadian bank-level data, but they also take into account the riskiness of each bank's foreign-asset exposure. The results establish a positive, but weak, relationship between DOI and performance—one that is dependent on each bank's risk profile. The authors discuss the policy implications of their analysis.

JEL classification: F23, G21
Bank classification: Financial institutions

Résumé

Des études sur le commerce international mesurent le lien entre le degré d'internationalisation des activités d'une entreprise et ses résultats. Les conclusions de ces études sont partagées. Les auteurs reprennent cette analyse à l'aide de données relatives aux banques canadiennes, tout en tenant compte du risque associé aux créances sur l'étranger que détient chacune des banques. Les auteurs concluent à l'existence d'une relation positive, quoique faible, entre le degré d'internationalisation et les résultats —, relation qui dépend du profil de risque propre à chaque banque, et traitent des implications de ce constat pour les politiques publiques.

Classification JEL : F23, G21
Classification de la Banque : Institutions financières

1. Introduction

Financial product innovation, regulatory reform, advances in information technology, and the tremendous growth in international trade have all contributed to the evolving role of banks within the international financial system. A popular perception of this process is that banks' activities are increasingly international, and Canadian financial institutions are no exception. The consequences of internationalization for bank performance, however, are largely unknown. A simple question therefore arises: Does greater internationalization lead to better performance for Canadian banks?

The international business literature offers a simple framework in which to measure the link between the degree of a bank's internationalization and its performance.[1] The idea is that, as firms increase the share of their operations abroad, thus increasing their degree of internationalization (DOI), they experience higher levels of performance. DOI can be measured in terms of the share of total sales, assets, income, or employees located outside a company's home country. Performance can be measured as Tobin's Q, return on assets, return on investment, return on equity, or profitability.

In this paper we have two objectives. First, we argue that the above framework must be implemented carefully. The methodology often used implicitly assumes that internationalization is the "cause" of observed firm value or firm performance—that is, it is implicitly assumed that increasing DOI has a direct impact on firm performance. Although it is true that, in part, the causality may move from DOI to performance, the aforementioned assumption ignores a very important aspect of the theory in international

[1] See Contractor, Kundu, and Hsu (2003) for an excellent survey.

business that firms go abroad to exploit firm-specific advantages. That is, firms develop techniques and products that give them some competitive advantage, which then allows the innovating firm to perform well in the domestic market. These firms then move abroad through foreign direct investment (FDI) and other modes to exploit these firm-specific advantages.[2] Since the firms that are doing well domestically are most likely to move abroad, we expect to see superior performance before they move abroad. To not explicitly account for this initial success may result in too much significance being attributed to DOI.

Our second objective is to formally account for risk in the analysis. Implicitly assumed in studies that use DOI as a predictor of firm performance is the idea that a positive relationship is somehow sufficient to justify the movement abroad. In other words, the positive relationship is taken to imply that the move abroad has "paid off." Although this may seem obvious, one must also take into account the risk associated with the firms' operations abroad and how they compare with their domestic operations. If the movement abroad increases the risk profile of a particular firm's operations, then an increase in performance is a minimum that would be expected by shareholders. The question is whether the increase in performance is sufficient to compensate shareholders for the increased risk.

Using quarterly data on Canadian banks over the period 1994 to 2004, we test the link between performance and DOI. We use a rigorous statistical methodology to test whether firms doing well increase their DOI, or whether the DOI improves performance. It is possible that both factors are at play: firms that are performing well move abroad to exploit their firm-specific advantages, and the move abroad itself improves performance.

[2] That is, firms can exploit advantages over local firms in the foreign jurisdiction.

Our analysis suggests that there is a significant but weak positive relationship between DOI and performance. However, the composition of foreign claims, in terms of risk, vis-à-vis more loans (as opposed to greater claims in the form of relatively risk-free securities), has higher returns. In other words, much of the increase in performance could be compensation for the higher risk associated with foreign claims.

The implications for bank managers and their boards are clear. If one believes that internationalization somehow improves firm performance, then corporate strategists may be led to believe that expanding abroad will lead to improvements in firm value. On the other hand, to the extent that firm values are high to begin with because of firm-specific advantages, corporate strategists will realize that internationalization is a reflection of underlying firm-specific advantages and hence high market values. Our results suggest that if firms decide to move abroad to improve performance, and their decision is based only on the positive relationship between DOI and performance, then such a strategy may not result in improved performance.

Furthermore, the link between DOI and firm performance must also take into account the risk profile of the companies' operations. If the expansion of multinational activities abroad does not result in greater risk in the firm's operations, then a positive impact of DOI on performance can be interpreted as a good outcome for the firm. On the other hand, if the movement abroad increases the risk exposure of the firm, then the increase in performance must be sufficient to compensate for the increased risk. In other words, if the performance of Canadian banks is to be assessed, the assessment must explicitly account for the risk profile of the banks' international operations. We suspect that similar results hold for firms in other industries, although the necessary data are not

available, nor are the risk profiles as easily assessed as for Canadian banks.

The implications for regulators is that although the DOI is correlated to bank performance, they must be careful not to encourage more international activity for the purpose of improving performance. Consequently, regulators must take into consideration the potential impact of how banks allocate their portfolios between domestic and foreign claims, as well as the composition of those foreign claims vis-à-vis risk. Understanding these aspects of Canadian banks' behaviour will assist regulators to ensure safe and efficient financial markets.

The rest of this paper is organized as follows. Section 2 provides a literature review. Section 3 provides a framework to test the DOI–performance relationship, which accounts for initial performance and risk. Section 4 describes the data (that is, it describes Canadian banking). Section 5 reports empirical evidence using quarterly data for the period 1994 to 2004. Section 6 concludes and describes the policy implications of our analysis.

2. Literature Review

The hypothesized positive relationship between performance and DOI goes back at least to Vernon (1971); many studies have followed. It is generally hypothesized that internationalization is good for firms and leads to better performance, for several reasons (Contractor, Kundu, and Hsu 2003; Dunning 1977, 1981). First, going international implies that firms can spread fixed costs, such as operating overhead and research and development (R&D) expenditures, through a greater scale and scope (Markusen 1984;

Kobrin 1991). Second, internationalization allows firms to learn about domestic markets from their international market experience, thus improving performance (Kobrin 1991). Third, operating in foreign jurisdictions allows firms to access factors at lower cost (Helpmann 1984; Porter 1990; Jung 1991). This is particularly true for instances of FDI and other modes of direct involvement in foreign markets. Fourth, internationalization allows firms to cross-subsidize their domestic operations and provides greater opportunities for price discrimination and tax and price arbitrage.

Although theory implies a positive relationship, the empirical evidence of the effects of DOI on performance is mixed (Hsu and Boggs 2003). For example, Sullivan (1994) lists 17 studies that test the relationship between DOI and financial performance, six of which find a positive relationship and five negative. The remaining six find no relationship. This reflects the consensus in the literature that the empirical results are highly dependent on the sample, the measures of DOI, and the measures of performance used.

In addition to testing this link, the literature has moved in two distinct directions. First, to address a measurement issue, Sullivan (1994) attempts to more reliably measure the DOI of a firm by developing a novel index measure of internationalization that captures three of its attributes: structural, performance, and attitudinal. As Ramaswamy, Kroeck, and Renforth (1996) show, there are several limitations to the empirical and theoretical underpinnings of Sullivan's work. As such, many studies continue to use a one-dimensional measure of DOI: the share of either assets, revenues, profits, or employment that locates abroad.

There is also a growing literature that focuses on the shape of the relationship between DOI and performance. Contractor, Kundu, and Hsu (2003) list 15 studies that find the relationship between performance and DOI is linear: seven of the studies find a positive relationship, four a negative relationship, and four no relationship. Two studies listed find a U-shaped relationship, and eight find an inverted U-shaped relationship. Contractor, Kundu, and Hsu (2003) and Lu and Beamish (2004) provide theoretical models for curvilinear relationships between DOI and performance.

Our objective is twofold. First, we reconsider the basic relationship between DOI and performance. More specifically, we address the direction of causality; that is, implicit in many studies is the idea that the DOI results in superior performance. By using an instrumental variables approach as well as conditioning on initial (lagged) performance, we are able to test whether superior performance is driving DOI, rather than the converse. This is similar to a stream of research undertaken in international trade. For example, Bernard and Jensen (1999) use data on U.S. manufacturing plants to establish that exporting does not lead to higher productivity ex post, but rather that the firms that are more productive ex ante are those that export. In other words, exporting can be viewed as a selection process. A similar situation may apply here. It *is the case* in Bernard and Jensen's sample that more productive firms seek export markets, and hence it is high productivity that explains exporting, not exporting that explains productivity. The practice of exporting is therefore as much a reflection of a firm's productivity as it is a determinant of the firm's productivity. We wish to import this idea into the DOI performance literature. Our unique data set positions us well to test this hypothesis.

Our second objective relates to bringing risk formally into the analysis. Many studies simply consider the degree to which a firm's activities are located abroad, but do not measure the riskiness of those foreign activities. Hsu and Boggs (2003) take into account the breadth of countries included in a firm's foreign operations. Capar and Kotabe (2003) measure the impact of international diversification on the performance of 81 German service firms. Kim, Hwang, and Burgers (1993) explain Bowman's paradox (1980) regarding the simultaneous presence of higher returns and lower risk—a scenario that seems inconsistent with modern portfolio theory derived in finance. The argument underlying this paradox is that global diversification provides firms doing business in the global economy opportunities that are not available to domestic firms, and this explains the simultaneous presence of high returns and low risks. By analyzing data for 125 multinationals, Kim, Hwang, and Burgers document the importance of global market diversification in the joint management of risk and return. The measures of global diversification capture the number of foreign markets being operated in, as well as the pattern of a firm's industries across those countries.

Our approach for measuring the riskiness of a firm's foreign operations is more precise. We are able to break down the DOI measures, by country, into the least risky government (U.S.) Treasury bills, very low risk interbank deposits, and more risky private loans. The DOI measures are also grouped according to whether the country is developed or less developed. We are therefore better able to capture the risk profile of a firm's foreign operations.

A small literature investigates the performance of Canadian banks. D'Souza and Lai (2004) estimate the effects of scope, scale, and concentration on Canada's six largest

banks. They find that banks with greater concentration in their business lines are less efficient. Interestingly, for some model specifications, the effect of size on performance (as measured by return on equity) is negative. Using a different methodology, Allen and Liu (2005) estimate cost functions for Canadian banks and find that larger banks are more efficient. Neither study considers the impact of DOI on performance.

3. Framework for Testing the DOI–Performance Relationship

The international business literature posits that there could be substantial benefits from becoming more international. Specifically, greater internationalization allows firms to spread fixed costs, learn about domestic markets from their international market experience, access factors at lower cost, and cross-subsidize their domestic operations and provide greater opportunities for price discrimination and tax and price arbitrage, thus leading to better performance. To measure the effects of internationalization on the performance of Canadian banks, the following simple regression framework proposed by Contractor, Kundu, and Hsu (2003) can be implemented:

$$PERF_{it} = \beta_0 + \beta_1 DOI_{it} + \beta_2 SIZE_{it} + \beta_3 X_{it} + \varepsilon_{it}, \quad (1)$$

where i indexes over the bank and t indexes over time, and $PERF$ is a measure of each bank's performance, measured as return on assets (ROA) and return on equity (ROE).[3] $SIZE$ is the size of the bank by assets, and DOI is a measure of the degree of internationalization, the definition of which is discussed below. The X's include other firm characteristics, squared terms to test for non-linearities in the relationship, and

[3] There are other measures of bank-level performance that could be considered, such as productivity or firm-specific returns relative to industry or market benchmark returns. In the case of banks, other measures, such as interest income margins and loan production, can also be considered. In keeping with the literature, we restrict our analysis to the two most commonly used metrics: ROA and ROE.

macroeconomic variables such as GDP growth and the real interest rate. The effect of DOI on bank performance is captured by β_1

Our initial measure of DOI used here is the ratio of foreign assets to total assets for each bank. This measure is further disaggregated to account for the composition of foreign-asset exposures. Specifically, in the case of banks, foreign-asset exposures can be split into deposits, loans, and securities:

$$PERF_{it} = \beta_0 + \beta_1 DEP_{it} + \beta_2 LOA_{it} + \beta_3 SEC +_{it} \beta_4 SIZE_{it} + \beta_5 X_{it} + \varepsilon_{it}, \qquad (2)$$

where *DEP*, *LOA*, and *SEC* are, respectively, the ratio of foreign deposits to total assets, foreign loans to total assets, and foreign securities to total assets.

By disaggregating foreign exposures into asset classes, the measure of the DOI can also account for the risk in the bank's portfolio, since loans to private entities would, on average, be more risky than securities, such as U.S. Treasury bills.[4] Similarly, interbank deposits are generally considered low risk, given their limited duration, transparency of bank creditworthiness, and the long-term relationships that exist among banks.[5]

There may also be significant differences between foreign exposures booked in developed markets, such as the United States, and those assets booked in jurisdictions that have lower levels of financial development. For example, banks' portfolio choices could include the holding of large quantities of U.S. Treasury bills, which are risk-free, and/or more speculative assets, such as loans to private firms operating in less-developed

[4] Because sovereign credit ratings are usually an upper bound on corporate ratings from the same country, this is a reasonable claim.
[5] Many interbank deposits are considered low risk, given the existence of implicit guarantees.

countries. To this end, equation (1) can be augmented to account for the allocation of assets across developed and emerging markets:

$$PERF_{it} = \beta_0 + \beta_1 DOI_DC_{it} + \beta_2 DOI_{it}_LDC_{it} + \beta_3 SIZE_{it} + \beta_4 X_{it} + \varepsilon_{it}, \qquad (3)$$

where *DOI_DC* and *DOI_LDC* are exposures to developed countries and less-developed countries, respectively. Similarly, the allocation of assets to private versus public entities can be considered.

3.1 Econometric concerns

The estimation of (1) is complicated by problems of simultaneity and endogeneity. Simply, the causality between DOI and performance can go in both directions: higher DOI may lead to better performance, whereas better performance may lead to higher DOI as firms move abroad to exploit the firm-specific advantages developed in the home market. That is, it is unclear whether superior performance is the result of the move abroad, or whether the move abroad is the result of superior performance. It is, of course, possible that superior ex ante performance leads to more DOI, which may further improve performance. As DOI increases, banks have access to a greater set of portfolio choices, and thus portfolio diversification across many operational jurisdictions allows the banks to obtain higher returns with less risk, as compared with banks that are limited to a domestic market.

Empirically, the estimation of an equation such as (1) may overestimate the benefits of DOI due to unobserved heterogeneity. For instance, the ability of the bank to operate in foreign jurisdictions may reflect the underlying quality of its managers. Thus, the effect of DOI is difficult to identify in the presence of unobservable firm-level management quality. The estimation of (1) is also complicated by the fact that reported

measures of performance may exhibit significant serial correlation, since banks may smooth reported earnings for market, tax, and capital-adequacy reasons.

We can account for these problems in several ways. First, we exploit the cross-sectional time-series properties of the data to account for firm-specific effects. Thus, (1) can be estimated using a standard fixed-effects model:

$$PERF_{it} = \beta_0 + \beta_i + \beta_1 DOI_{it} + \beta_2 SIZE_{it} + \beta_3 X_{it} + \varepsilon_{it}, \qquad (4)$$

where β_i is a firm-specific fixed effect. However, inclusion of fixed effects does not necessarily solve the problem of endogeneity of the right-hand-side variables.

Instruments are needed to address this endogeneity problem. Moreover, inclusion of the lagged dependent variable is necessary to account for the smoothing of earnings. Fortunately, estimation with lagged dependent variables can be accommodated within an Arellano-Bond generalized method of moments (GMM) estimation procedure (Arellano and Bond 1991). In this case, lagged dependent variables are included on the right-hand side. The data are first differenced, and the lagged dependent and other endogenous right-hand-side variables are instrumented with their lagged levels. The GMM results are reported in addition to ordinary least squares (OLS), generalized least squares (GLS), and fixed-effects specifications.

4. Data and Descriptive Statistics

We use confidential firm-level data on Canadian banks. The data are available quarterly by bank, but must be reported in an aggregated form to prevent identification of individual banks in the sample. There are more than 50 banks operating in Canada, of which 13 are domestic and 49 are subsidiaries of foreign banks. Our study focuses on 12

domestic banks operating in Canada. Six of these Canadian banks have significant foreign operations (DOI).

The data on foreign claims exposure are taken from the consolidated quarterly banking statistics report compiled by the Bank of Canada. Every bank that operates in Canada is required to provide quarterly statistics of their total asset exposure to each foreign jurisdiction in which it operates, on a fully consolidated basis.[6] This covers all claims, including deposits to other financial institutions; loans to financial institutions and firms; and securities, both government and corporate, made outside and inside Canada. These foreign claims of domestic Canadian banks are adjusted to account for exchange rate revaluations. The data cover all Canadian banks' exposures to over 150 jurisdictions from 1994 to 2004. Additional bank balance-sheet data are collected, including assets, market capitalization, and other bank-specific characteristics.

Table 1 reports the sample period averages for bank-level characteristics over the period 1994–2004. For the entire sample, mean bank assets were $120.1 billion and bank capital was $5.5 billion.[7] The average ROA and ROE of the sample was 0.59 per cent and 10.7 per cent, respectively. Most banks had some foreign claims: on average, total foreign claims constituted 18.2 per cent of total assets. These assets were split into deposits, loans, and securities, representing 3.3 per cent, 9.6 per cent, and 5.4 per cent of total assets, respectively. The division between claims on private entities and public entities is stark: most claims were to private entities (private claims were approximately five times greater than public claims). The descriptive statistics for the six largest, and

[6] Consolidation is conducted as per guidelines in the *Canadian Institute of Chartered Accountants Guide*.
[7] All figures are in constant 1997 Canadian dollars. Canadian banks are neither large nor small by international standards. The largest Canadian bank, as measured by bank capital, ranks in the top 60 banks globally.

more internationally active, banks are provided in columns (3) and (4). The average size was $216.3 billion in assets, with bank capital of $9.9 billion. These banks had higher ROA and ROE, and, interestingly, were more international. On average, total foreign claims were 32.9 per cent of total assets: deposits were 5.9 per cent, loans 17.3 per cent, and securities 9.7 per cent of assets. The ratio of public and private claims is roughly 1:5. Even within the most internationally active banks, there is considerable variation. Over the sample period, foreign exposures varied by as much as 15 per cent of total assets. The descriptive statistics therefore suggest, at a glance, that Canadian banks are extensively international.

Table 2 lists a sample of the countries to which at least one Canadian bank had a foreign-asset claim in 2004.[8] Focusing on the six largest banks, claims were held against an average of 80 countries in 1994. The number of jurisdictions in which Canadian banks held claims rose slowly through the 1990s to an average of 86 countries by 2004. The size and extent of these foreign claims was considerable: total foreign claims, in constant 1997 dollars, were over $264.6 billion in 1994.[9] Total foreign claims peaked in 2001 at $578.6 billion, and then fell to $447.4 billion in 2004 (Figure 1). As a percentage of total assets, however, the trend in foreign assets was quite stable. Figure 2 shows that foreign-asset exposures in 2004 constituted 29 per cent of total assets for Canadian banks. This is slightly lower than the reported levels in the 1990s (and considerably lower than the average of 40 per cent in the 1980s).

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[8] Overall, banks reported claims to over 159 countries.

[9] The six largest banks account for 92 per cent of the assets and 96 per cent of all foreign exposures. Interestingly, for the United States, Goldberg (2001) finds that the 10 largest banks account for 86 per cent of foreign exposures. In this respect, the Canadian experience is very similar to that of the United States.

The composition of foreign-asset exposures is also important to consider. Focusing only on deposits and loans, the proportion of deposits to total assets fell from 6.8 per cent to only 4.5 per cent from 1994 to 2004 (Figure 2), and the proportion of loans to total foreign assets fell from 18.4 per cent to only 11.5 per cent. At the same time, securities rose as a proportion of foreign assets from 6.0 per cent to 12.8 per cent. Since foreign securities are heavily weighted in U.S. treasuries, one could argue that the banks became less exposed to foreign risk (at least, if one considers U.S. Treasury bills to be the most risk-free security in existence).

Figure 3 shows foreign-asset exposures by region. Overall, exposures to the United States were $120.8 billion in 1994, or 45.8 per cent of total foreign exposures, and subsequently rose to $210.5 billion in 2004, or 47.5 per cent of total foreign assets. Much of this rise is attributable to increased holdings of securities.[10] Exposures to other industrialized countries also rose over time, from $105.1 billion (39.8 per cent of foreign exposures) to more than $162.9 billion (36.8 per cent of foreign exposures). Latin American exposures rose from $22.2 billion in 1994 to $50.7 billion in 2004, constituting roughly 8.4 and 11.4 per cent of foreign exposures. Exposures to East Asia remained steady between $10.4 billion and $11.5 billion during the sample period, indicating a fall as a proportion of total foreign assets from 4.0 per cent to 2.6 per cent.[11] Figure 4 shows the ratio of private claims and public claims to total assets. Since the 1990s, private and public claims have remained stable as a proportion of total assets.

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[10] The secular increase, absolutely and proportionally, in U.S. assets, suggests that Canadian banks are not holding these assets simply due to their higher returns. Rather, it could be the case that U.S. assets, particularly Treasury bills, are held for other reasons, such as collateral or for derivative trading purposes. Future research on the determinants of these holdings of U.S. assets is warranted.

[11] The level of exposures to Africa and the Middle East are negligible.

5. Regression Results

The descriptive statistics reveal that Canadian banks have significant foreign-asset exposures, and that the composition of those exposures continues to evolve over time. In particular, there is considerable variation in both the type of assets being held and the region in which they are booked. The empirical question we seek to answer is whether the DOI has an effect on performance. We also test whether the composition of the internationalization vis-à-vis riskiness matters.

Table 3 reports the results of estimation of specification (1), with ROA and ROE as the dependent variables. For each measure of performance, estimation by OLS, GLS, and fixed effects (FE) is provided. The measure of DOI is positively correlated with ROA performance when controlling for size of the bank, macroeconomic variables, and time effects (see columns (1–3)). Only under the GLS specification, however, is the positive correlation between DOI and performance significant. The results for ROE differ substantively: DOI is no longer significantly correlated to performance. Interestingly, size is positively related to ROE. In both the ROA and ROE regressions, the relationship between DOI and performance appears to be linear: the inclusion of squared terms did not produce statistically significant results. Canadian real GDP growth is not significantly related to performance, but higher Bank of Canada real overnight rates are negatively and significantly related to performance for some specifications of the model. In order to control for foreign macroeconomic performance, we also include U.S.

real GDP growth and the real federal funds rate. In both cases, there is no effect on performance and the coefficients for foreign claims remain unaffected.[12]

The lack of a strong positive relationship between DOI and performance may reflect the fact that the type of foreign exposure is obscured by aggregation. We consider the composition of foreign-asset exposures and its effect on performance when foreign exposures are disaggregated into deposits, loans, and securities. Table 4 reports the results of the estimation of (2) for ROA and ROE. Higher ratios of foreign deposits and loans are positively correlated to higher returns, but only the latter are significant. Estimation by fixed effects renders this result insignificant. When ROE is considered, loans are positively but insignificantly correlated to DOI. Holding greater amounts of securities, however, is negatively and significantly correlated with performance. The exercise is repeated with exposures disaggregated by whether claims are against private or public entities (Table 5). For both ROA, private claims are positively correlated to performance, while public claims are negatively related. In both cases, however, the results are insignificant when estimated by fixed effects. Lastly, the data are disaggregated into developed and less-developed country exposures (Table 6). As before, for ROA and ROE, the fixed-effect specification does not show that there is a link between DOI and performance. These results suggest that, although there is a positive relationship between DOI and performance, much of this can be attributed to firm-specific qualities. That is, better firms tend to be more international.

[12] All regressions include Canadian and U.S. GDP and real interest rates. Inclusion of long-term rates did not alter the results. Also, controlling for foreign macroeconomic conditions with world real GDP growth did not change the results.

Estimation by OLS, GLS, and fixed effects may mask the biases introduced by the endogeneity of the right-hand-side variables, and the fact that banks may smooth earnings and hence measures of performance.[13] To correct for these potential biases, the regressions are estimated using Arellano-Bond GMM. Tables 7 and 8 report GMM results for ROA and ROE for aggregated and disaggregated claims. In both cases, four lags of the dependent variable are included in order to satisfy the AR(2) test for the null hypothesis of no autocorrelation in the residuals. The results indicate that there is evidence of earnings smoothing for ROA, because lagged values are statistically significant. However, this effect is muted for ROE (Table 8). For ROA, the results suggest that there is a positive relationship between DOI and performance (column (1) of Table 8), but it is not statistically significant. When the foreign claims are disaggregated into deposits, loans, and securities (column (2)), the results show that higher deposits and loans are correlated with better performance, but that only the deposits are statistically significant. The previous OLS and GLS results with respect to private versus public claims are only partially confirmed by GMM: private claims are positively correlated with performance and public claims are negatively correlated, but, as before, neither is significant. Lastly, the data are disaggregated into developed and less-developed country exposures – again with no significant empirical relationship. The exercise is repeated for ROE and the results are reported in Table 8. For all four specifications, there is no statistically significant relationship between DOI and ROE. The lack of clear results, however, may reflect the fact that Arellano-Bond GMM estimation, by construction, uses

[13] Banks smooth earnings by timing capital writedowns. This smoothing activity may reflect optimization for capital-adequacy requirements and taxation.

weak instruments, and in small samples the biases induced by this shortcoming may lead to inconclusive results.

6. Conclusions and Policy Implications

We have analyzed confidential data on the performance of Canadian banks operating domestically and abroad. The international operations of these banks were broken down by region of activity and by the riskiness of the activity. Our analysis suggests that there is a weak but significant relationship between the degree to which Canadian banks operate abroad and the performance of those banks. The evidence also suggests that this relationship is dependent on the risk profile of the banks' foreign operations.

It is important that the positive relationship between DOI and performance not be interpreted as causal without careful statistical tests. We have argued that although, in principle, the causality may run in both directions, the theory in international business is that, in fact, the principal direction of causality would run from performance to DOI. Those firms that are innovative and doing well domestically will have superior performance and be likely to move abroad. Our analysis clearly establishes that those firms that are performing well domestically early on, as measured by high initial performance, have a significant positive relationship between DOI and performance, thus confirming one of the main theoretical predictions of international business.

We have also established that it is not just the degree of international operations that is needed to test the relationship between DOI and performance, but a breakdown of those foreign operations, to determine the level of risk involved. We have been able to break down the foreign activity into developed versus developing countries, and to break

down the type of investment from the least risky types, such as U.S. government securities, to the most risky, such as loans to businesses in developing countries. These results are very important, because they highlight one of the basic principles of finance: the higher the risk associated with an investment project, the higher should be its expected return. We have shown that firms can expand internationally in a relatively risk-free way, or they can take on significantly higher risk. Tests of the DOI–performance relationship that do not address this issue average these two effects. Having access to these confidential data on the operations of Canadian banks allowed us to measure the DOI–performance relationship in such a way as to take into account these issues of risk.

The policy implications of our analysis are clear. The positive relationship between DOI and performance does not imply that firms with lagging performance should attempt to increase DOI in order to boost their performance. On the contrary, firms that are doing well domestically are best placed to do well globally. For that reason, we expect to see superior performance before firms move abroad. To not explicitly account for this initial success may result in too much significance being attributed to DOI.

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Table 1: Descriptive Statistics
All banks, 1994–2004

	All banks		Big six	
	Mean (1)	Median (2)	Mean (3)	Median (4)
Assets ($ billion constant 1997)	120.1	73.2	216.3	235.2
Bank capital ($ billion constant 1997)	5.5	3.3	9.9	10.7
ROA (%)	0.59	0.64	0.65	0.67
ROE (%)	10.7	12.8	13.8	14.5
Foreign claims/assets (%)				
Total claims	18.2	22.4	32.9	32.9
Deposits	3.3	2.0	5.9	5.9
Loans	9.6	10.5	17.3	16.5
Securities	5.4	3.3	9.7	8.8
Private claims	15.1	19.4	27.3	27.2
Public claims	3.1	1.6	5.6	5.9

Source: Bank of Canada

Table 2: Countries Reporting A Foreign Asset Exposure to Canadian Banks (selected countries)

Industrialized countries	Latin America	Asia	Middle East	Offshore banking centres
United States	Argentina	Sri Lanka	Bahrain	Bahamas
United Kingdom	Brazil	India	Cyprus	Barbados
Austria	Chile	Indonesia	Israel	Bermuda
Belgium	Colombia	Korea	Jordan	Cayman Islands
Denmark	Ecuador	Malaysia	Syria	
France	El Salvador	Nepal	Egypt	
Germany	Guatemala	Philippines		
Italy	Honduras	Singapore		
Netherlands	Mexico	Thailand		
Norway	Paraguay			
Sweden	Peru			
Switzerland	Uruguay			
Japan	Venezuela			
Finland	Guyana			
Ireland	Jamaica			
Portugal				
Turkey				
Australia				
New Zealand				

Source: Bank of Canada

Table 3: Regression Results

	Dependent variable:					
	ROA			ROE		
	OLS (1)	GLS (2)	FE (3)	OLS (4)	GLS (5)	FE (6)
Ln assets	-0.026	-0.036	-0.209**	0.015**	0.015**	0.014**
	(0.041)	(0.023)	(0.054)	(0.002)	(0.002)	(0.006)
Foreign claims/ Assets	0.791	0.944**	0.481	-0.035	-0.025	-0.028
	(0.528)	(0.387)	(0.742)	(0.031)	(0.039)	(0.078)
Overnight rate	-0.038	-0.044*	-0.038*	-0.002	-0.003	-0.002
	(0.025)	(0.023)	(0.020)	(0.003)	(0.002)	(0.002)
GDP growth	-0.022	-0.021	-0.022	-0.001	-0.001	-0.001
	(0.023)	(0.020)	(0.019)	(0.002)	(0.002)	(0.002)
Federal funds rate	0.014	0.024	0.012	0.005	0.006*	0.005
	(0.031)	(0.033)	(0.031)	(0.004)	(0.003)	(0.003)
U.S. GDP growth	0.013	0.013	0.013	0.001	0.001	0.001
	(0.016)	(0.015)	(0.016)	(0.002)	(0.001)	(0.002)
N	439	439	439	439	439	439
R^2	0.06			0.37		
F	2.42		2.17	16.28		2.31
Wald Chi^2		21.84			157.35	

** and * indicate significance at the 5 per cent and 10 per cent levels, respectively. Robust standard errors are in parentheses. Time dummies are included.

Table 4: Regression Results

	Dependent variable:					
	ROA			ROE		
	OLS (1)	GLS (2)	FE (3)	OLS (4)	GLS (5)	FE (6)
Ln assets	-0.025	-0.035	-0.209**	0.015**	0.015**	0.014**
	(0.042)	(0.023)	(0.054)	(0.002)	(0.002)	(0.006)
Foreign deposits/ Assets	1.340	1.597	2.383	0.113	0.132	0.256
	(0.916)	(1.489)	(2.127)	(0.082)	(0.146)	(0.221)
Foreign loans/ Assets	1.247**	1.322*	1.305	0.041	0.044	0.102
	(0.525)	(0.710)	(0.992)	(0.043)	(0.069)	(0.103)
Foreign securities/ Assets	-0.310	-0.090	-0.954	-0.241**	-0.228**	-0.250**
	(0.725)	(0.933)	(1.060)	(0.084)	(0.091)	(0.110)
N	439	439	439	439	439	439
R^2	0.07			0.39		
F	3.16		2.15	17.85		2.55
Wald Chi^2		24.27			179.72	

** and * indicate significance at the 5 per cent and 10 per cent levels, respectively. Robust standard errors are in parentheses. Time dummies, real GDP growth, and real interest rates are included.

Table 5: Regression Results

	Dependent variable:					
	ROA			ROE		
	OLS (1)	GLS (2)	FE (3)	OLS (4)	GLS (5)	FE (6)
Ln assets	-0.027	-0.037	-0.206**	0.015**	0.015**	0.015**
	(0.041)	(0.023)	(0.054)	(0.002)	(0.002)	(0.006)
Foreign private claims/ Assets	1.333**	1.414**	0.683	0.037	0.037	0.001
	(0.636)	(0.527)	(0.762)	(0.039)	(0.052)	(0.080)
Foreign public claims/ Assets	-1.651*	-1.195	-1.479	-0.359**	-0.306*	-0.306
	(0.756)	(1.674)	(1.858)	(0.124)	(0.166)	(0.194)
N	439	439	439	439	439	439
R^2	0.07			0.38		
F	2.70		2.12	17.68		2.33
Wald Chi^2		23.67			162.56	

** and * indicate significance at the 5 per cent and 10 per cent levels, respectively. Robust standard errors are in parentheses. Time dummies, real GDP growth, and real interest rates are included.

Table 6: Regression Results

	Dependent variable:					
	ROA			ROE		
	OLS (1)	GLS (2)	FE (3)	OLS (4)	GLS (5)	FE (6)
Ln assets	-0.024	-0.035	-0.210**	0.016**	0.015**	0.014**
	(0.042)	(0.023)	(0.054)	(0.002)	(0.002)	(0.006)
DC foreign claims/ Assets	0.689	0.849**	0.447	-0.060*	-0.048	-0.023
	(0.574)	(0.427)	(0.791)	(0.036)	(0.043)	(0.083)
LDC foreign claims/ Assets	1.395**	1.493	1.278	0.119*	0.122	0.075
	(0.434)	(1.050)	(1.835)	(0.059)	(0.105)	(0.192)
N	439	439	439	439	439	439
R^2	0.06			0.38		
F	3.47		2.06	17.19		2.18
Wald Chi^2		22.58			162.40	

** and * indicate significance at the 5 per cent and 10 per cent levels, respectively. Robust standard errors are in parentheses. Time dummies, real GDP growth, and real interest rates are included.

Table 7: Regression Results, GMM

Dependent variable: ROA	(1)	(2)	(3)	(4)
ROA_{t-1}	-0.121	-0.125	-0.125	0.122
	(0.122)	(0.122)	(0.120)	(0.122)
ROA_{t-2}	0.214**	0.210**	0.210**	0.214**
	(0.081)	(0.080)	(0.078)	(0.080)
ROA_{t-3}	-0.221**	-0.226**	-0.225**	-0.221**
	(0.103)	(0.106)	(0.106)	(0.103)
ROA_{t-4}	0.234**	0.228**	0.229**	0.234**
	(0.081)	(0.085)	(0.086)	(0.082)
Foreign claims/ Assets	0.589			
	(0.725)			
Foreign deposits/ Assets		1.684*		
		(1.020)		
Foreign loans/ Assets		0.871		
		(1.099)		
Foreign securities/ Assets		-0.046		
		(0.457)		
Foreign private claims/ Assets			0.737	
			(0.864)	
Foreign public claims/ Assets			-0.892	
			(1.847)	
DC foreign claims/ Assets				0.548
				(0.758)
LDC foreign claims/ Assets				1.055
				(0.766)
AR (1) (*p*-value)	0.02	0.02	0.02	0.02
AR (2) (*p*-value)	0.62	0.64	0.63	0.63
N	379	379	379	379

** and * indicate significance at the 5 per cent and 10 per cent levels, respectively. Robust standard errors are in parentheses. Time dummies, real GDP growth, and real interest rates are included.

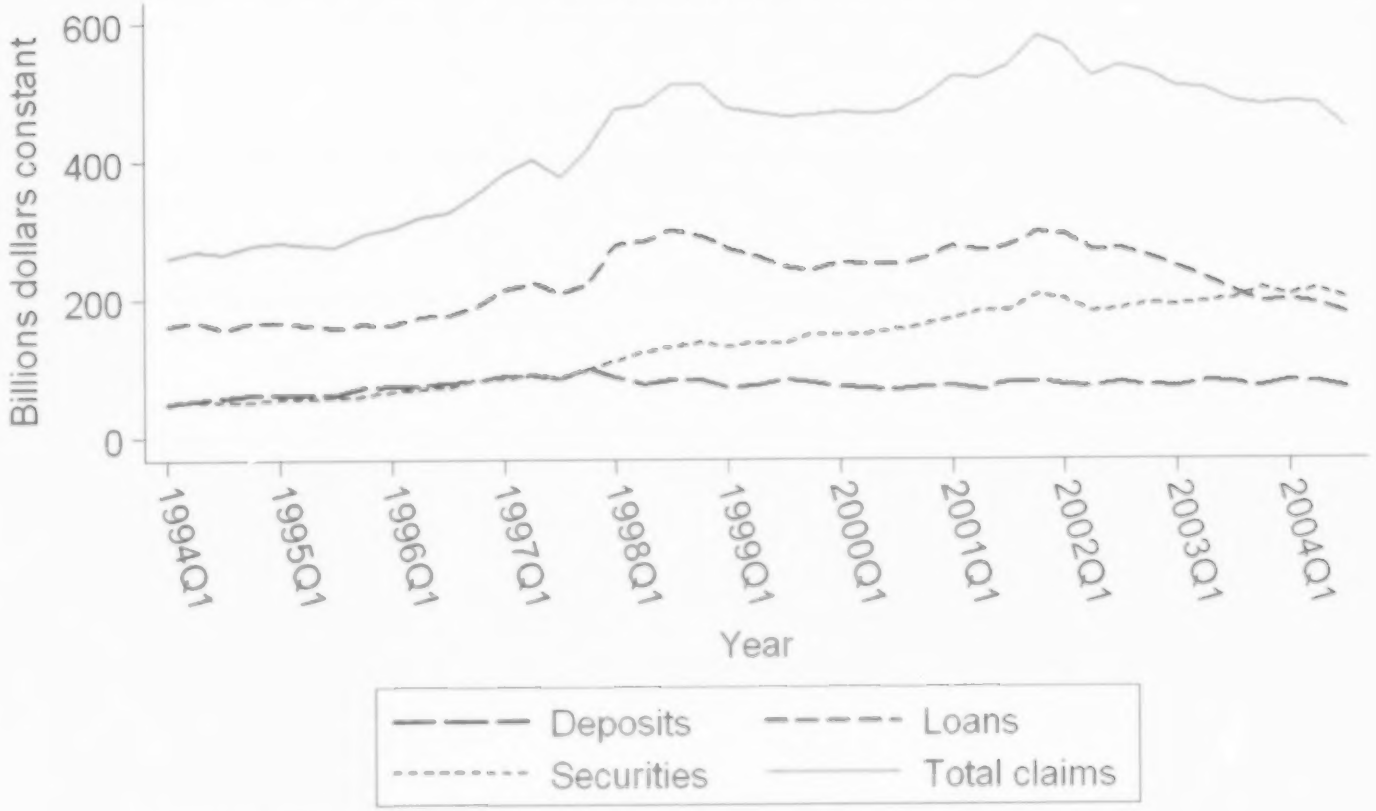
Table 8: Regression Results, GMM

Dependent variable: ROE	(1)	(2)	(3)	(4)
ROE_{t-1}	0.123*	0.120*	0.123*	0.123*
	(0.073)	(0.070)	(0.070)	(0.073)
ROE_{t-2}	0.104*	0.101*	0.103**	0.103*
	(0.055)	(0.054)	(0.052)	(0.055)
ROE_{t-3}	-0.030	-0.034	-0.030	-0.030
	(0.052)	(0.053)	(0.053)	(0.052)
ROE_{t-4}	0.195**	0.191**	0.195**	0.195**
	(0.063)	(0.069)	(0.073)	(0.063)
Foreign claims/ Assets	-0.049			
	(0.062)			
Foreign deposits/ Assets		0.084		
		(0.129)		
Foreign loans/ Assets		-0.031		
		(0.119)		
Foreign securities/ Assets		-0.102*		
		(0.059)		
Foreign private claims/ Assets			-0.048	
			(0.084)	
Foreign public claims/ Assets			-0.057	
			(0.287)	
DC foreign claims/ Assets				-0.050
				(0.075)
LDC foreign claims/ Assets				0.012
				(0.050)
AR (1) (*p*-value)	0.00	0.00	0.00	0.01
AR (2) (*p*-value)	0.52	0.52	0.52	0.52
N	379	379	379	379

** and * indicate significance at the 5 per cent and 10 per cent levels, respectively. Robust standard errors are in parentheses. Time dummies, real GDP growth, and real interest rates are included.

Figure 1: Total Foreign Claims

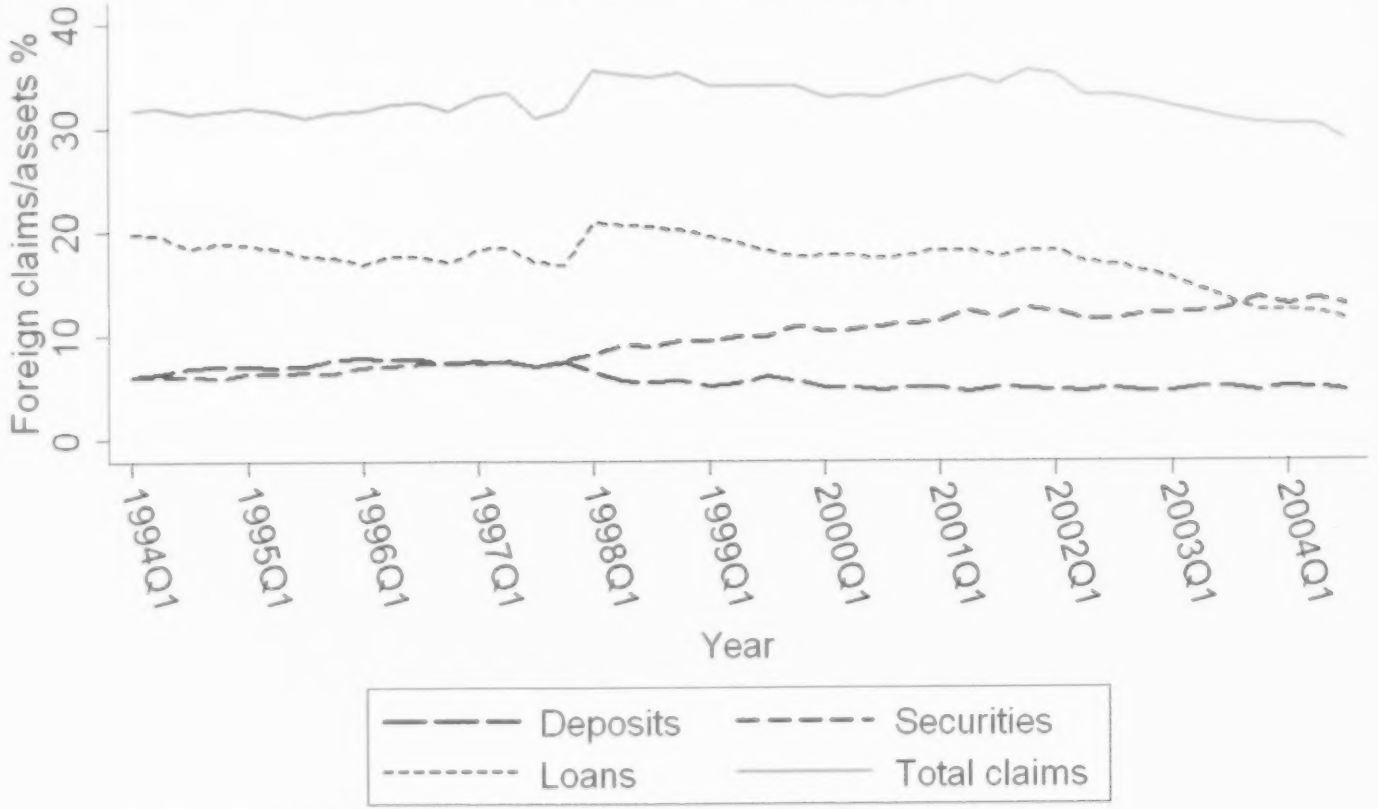
All banks, 1994 to 2004



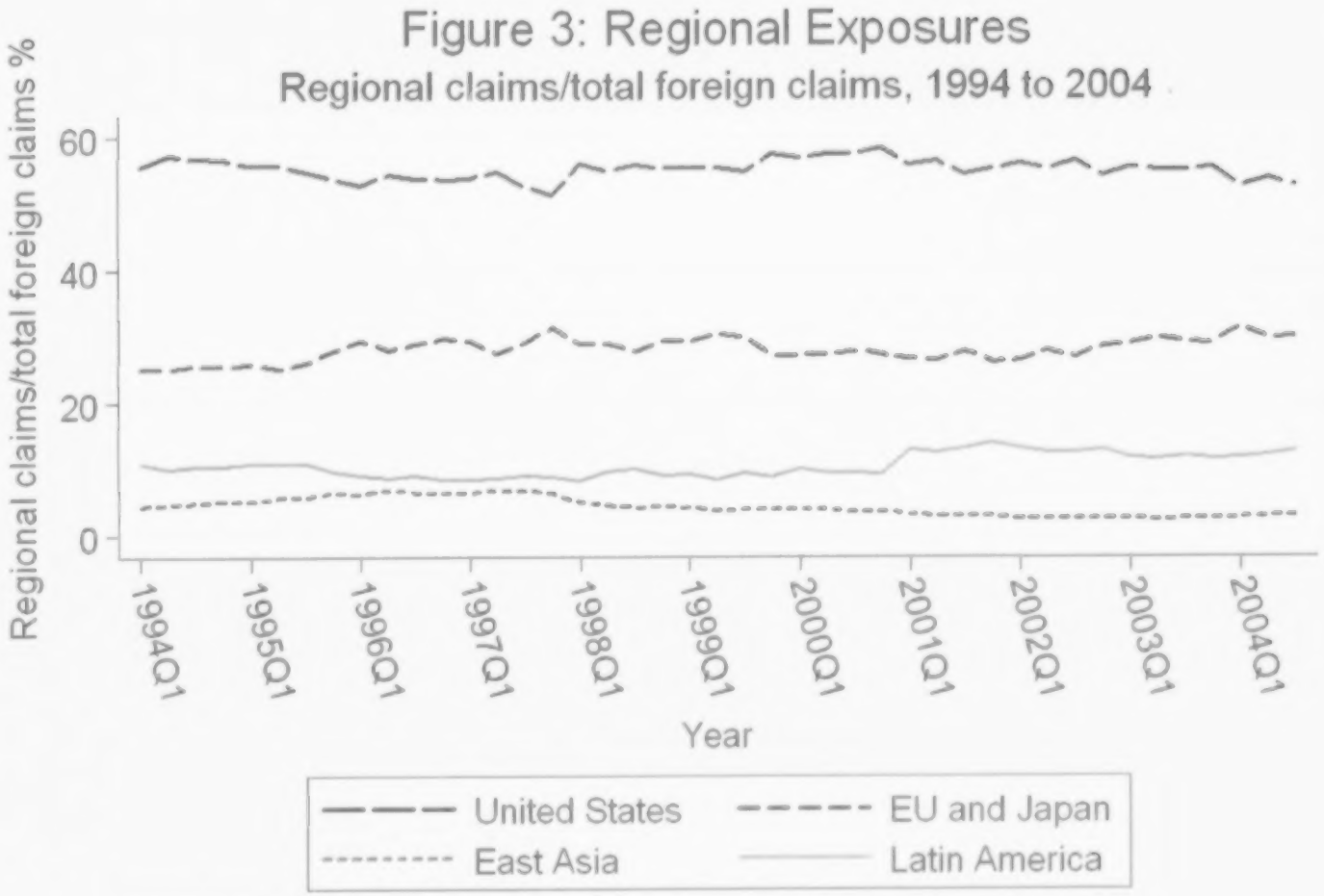
Source: Bank of Canada

Figure 2: Total Foreign Claims/Assets

All banks, 1994 to 2004



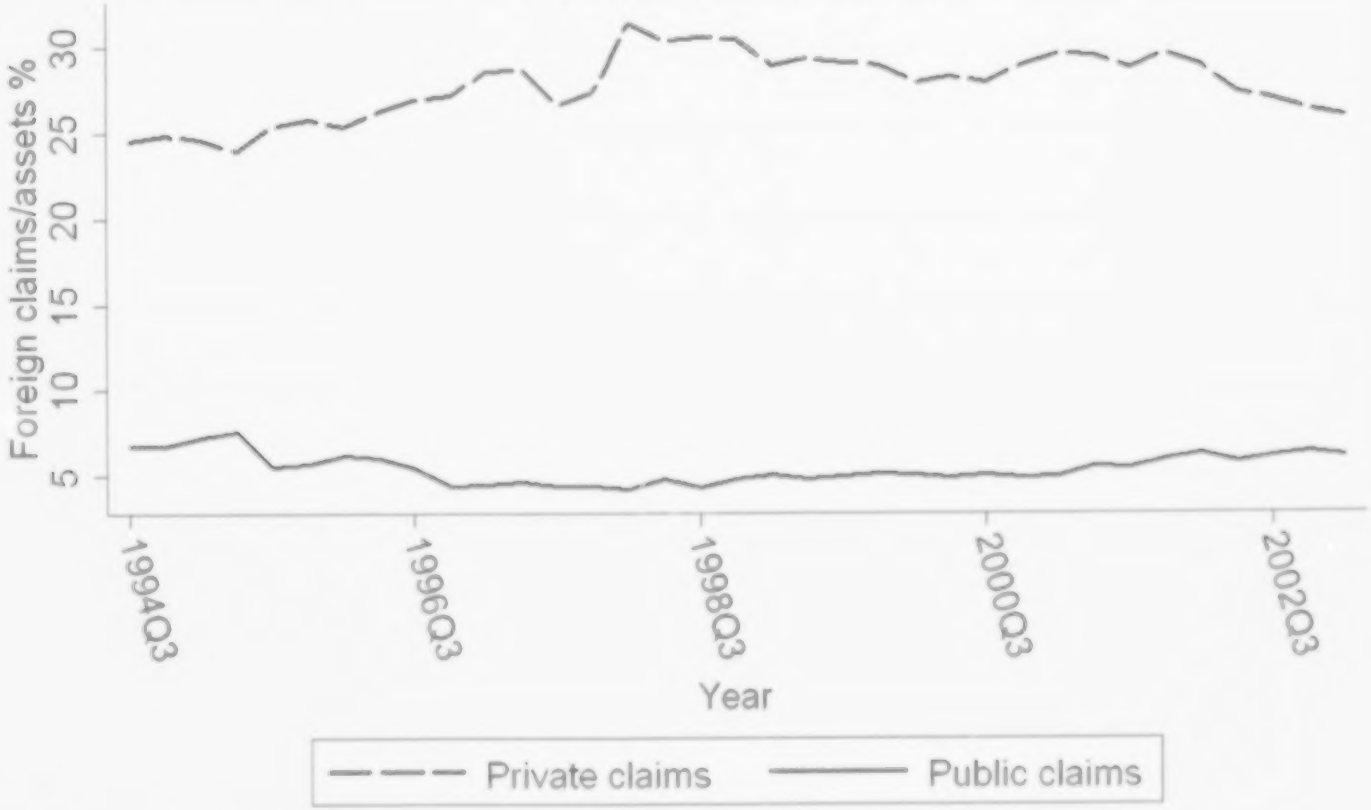
Source: Bank of Canada



Source: Bank of Canada

Figure 4: Private and public foreign claims

All banks, 1994 to 2003



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